

Creating a New Bioscience Research Infrastructure for Cost-Competitive, Carbon-Neutral Biofuels

Microbes and Bioethanol

Low-cost oil alternative reduces greenhouse gas emissions

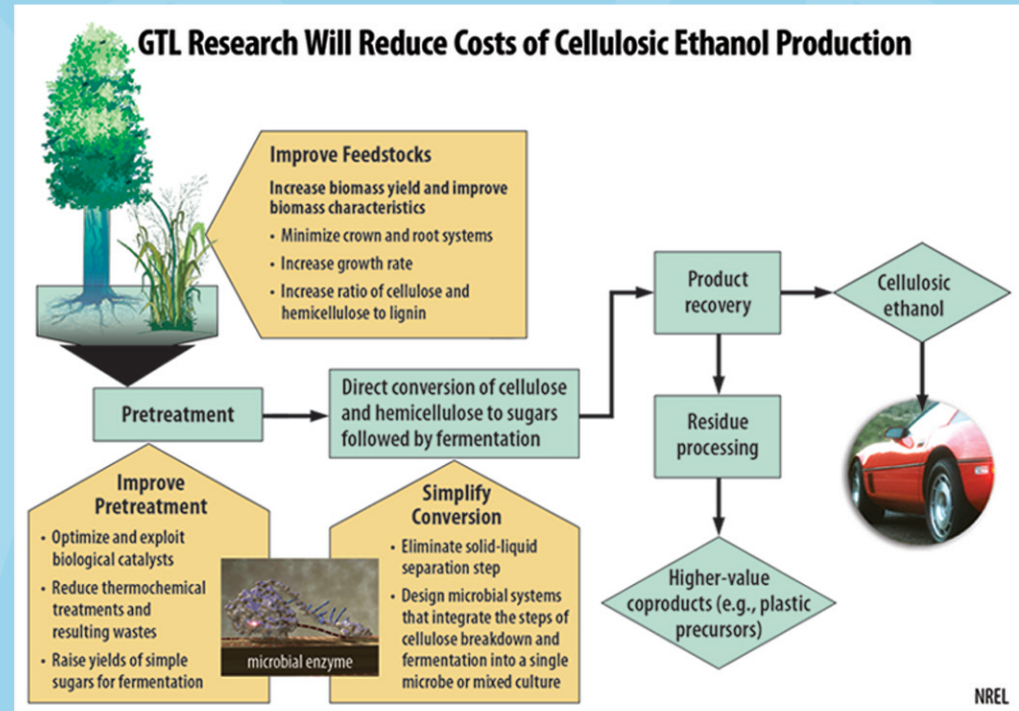
Consumption of biofuels such as ethanol produces no net CO₂ emissions.

Current ethanol production using cornstarch as a feedstock has limited potential for substantial improvements in volume and cost.

Ethanol made from plentiful plant cellulose materials (e.g., corn stover) has promise for meeting a significant portion of domestic gasoline demand.

Many microbes and fungi are sources of enzymes that can degrade cellulose into its simpler components for efficient conversion to ethanol.

Research in the Genomics:GTL program will lead to better understanding of these processes, resulting in increased production efficiencies and reduced costs.



The figure above depicts some of the research goals for optimizing the use of microbes or their enzymes in converting biomass (plant materials) to cellulosic ethanol.

Specific GTL targets (shown in the yellow boxes) include improving feedstocks and pretreatment and simplifying conversion, thus enabling development of integrated bioprocessing.